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**Lo**

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(54) **FOLDING DEVICE FOR TREADMILLS**

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(51) **Int. Cl.**
***A63B 22/02*** (2006.01)

(52) **U.S. Cl.** ..... **482/54**

(58) **Field of Classification Search** ..... 482/51, 482/54

See application file for complete search history.

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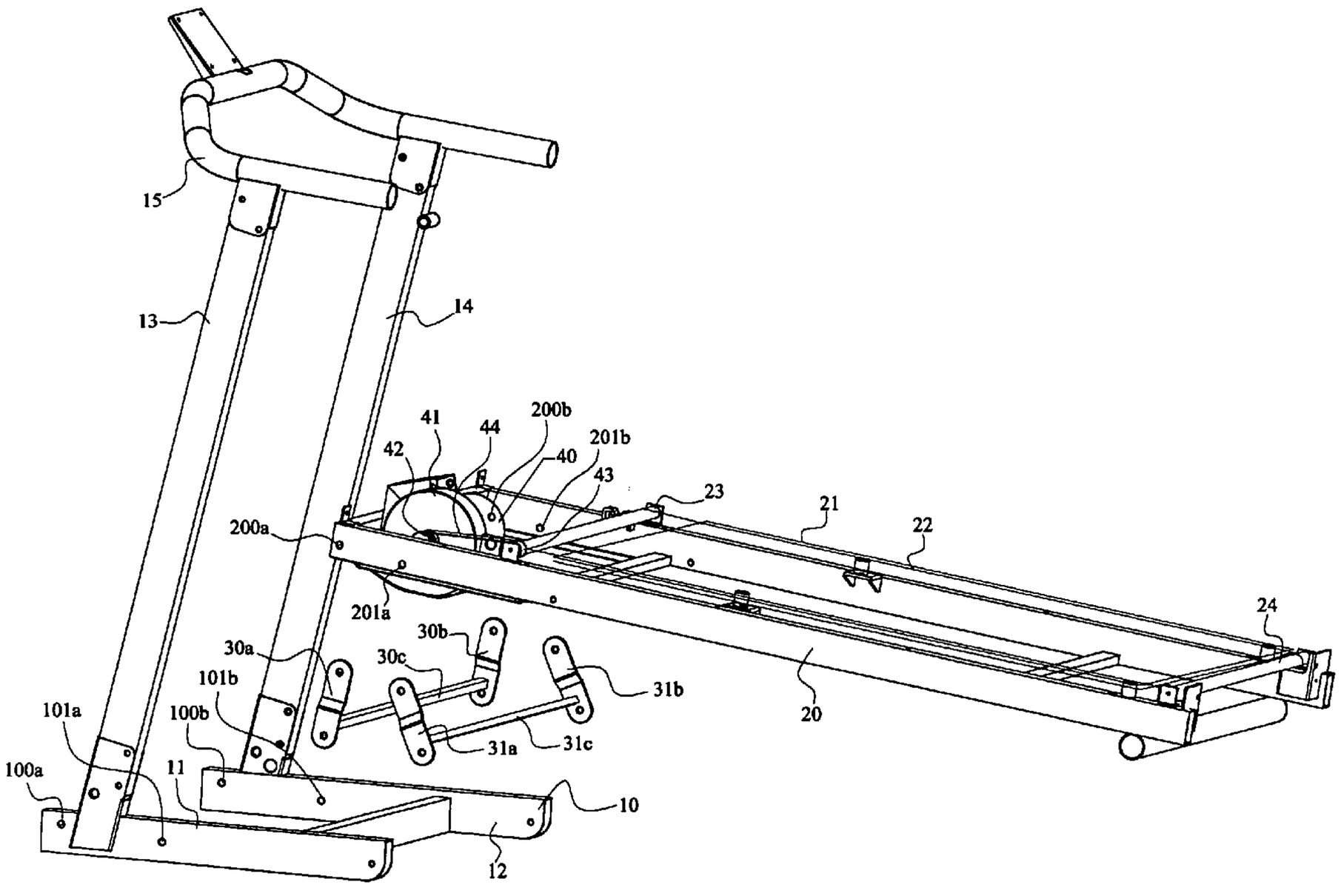
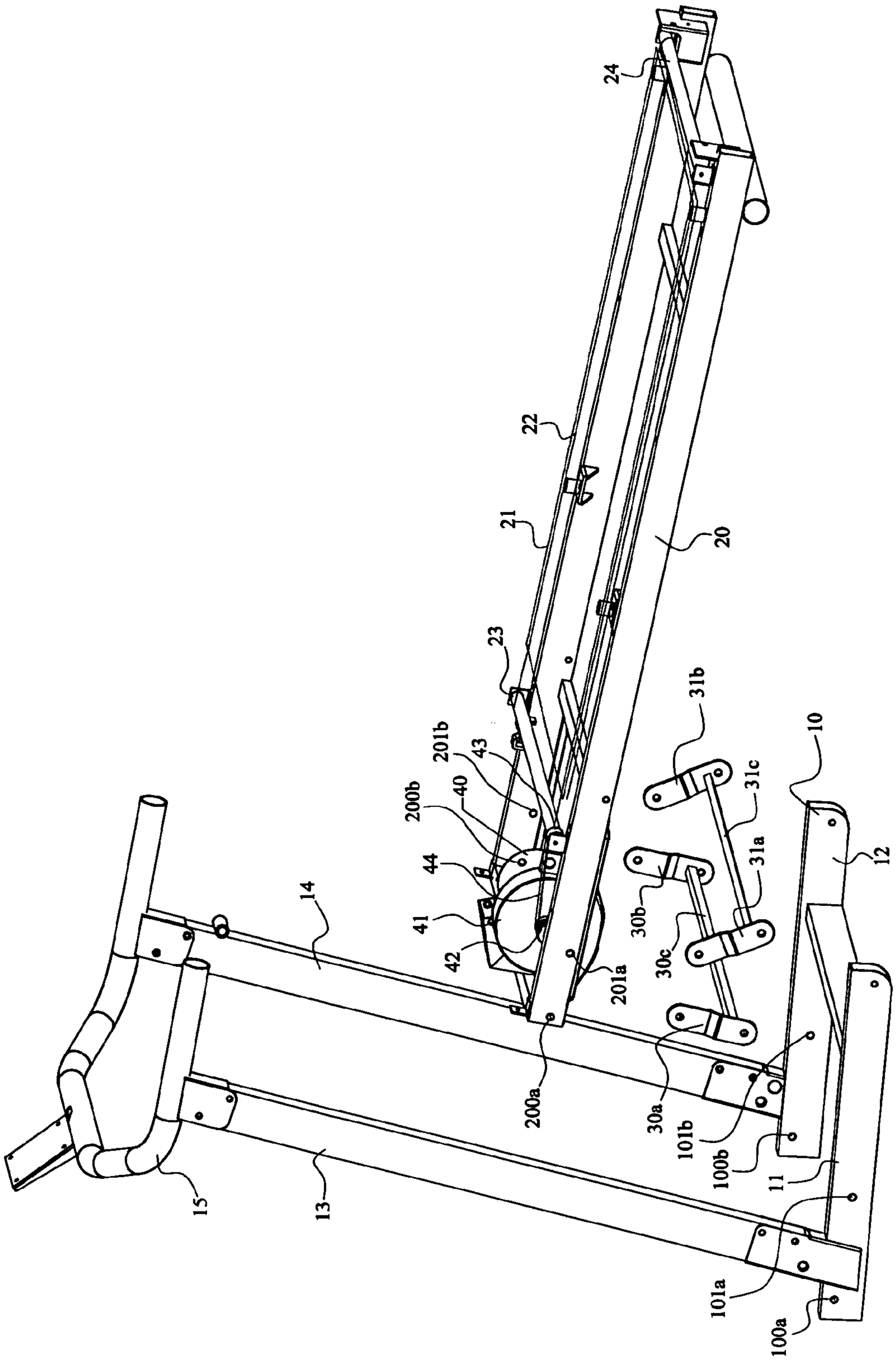
(57) **ABSTRACT**

A treadmill includes a base and a frame having a first end pivotably connected to the base by two parallel first links and two parallel second links. An endless belt is mounted to the frame. Two respective first ends of the two first links are pivotably connected to two respective first pivotal points on the two side rails of the base, and two respective second ends of the two first links are pivotably connected to two respective second pivotal points on two sides of the first end of the frame. Two respective first ends of the two second links are pivotably connected to two respective third pivotal points on the two side rails of the base, and two respective second ends of the two second links are pivotably connected to two respective fourth pivotal points on the two sides of the first end of the frame. The frame can be pivoted relative to the base by the first and second links.

**7 Claims, 8 Drawing Sheets**




24
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23
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43
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15
13
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101b
100b
11
101a
100a
10
12

FIG. 1

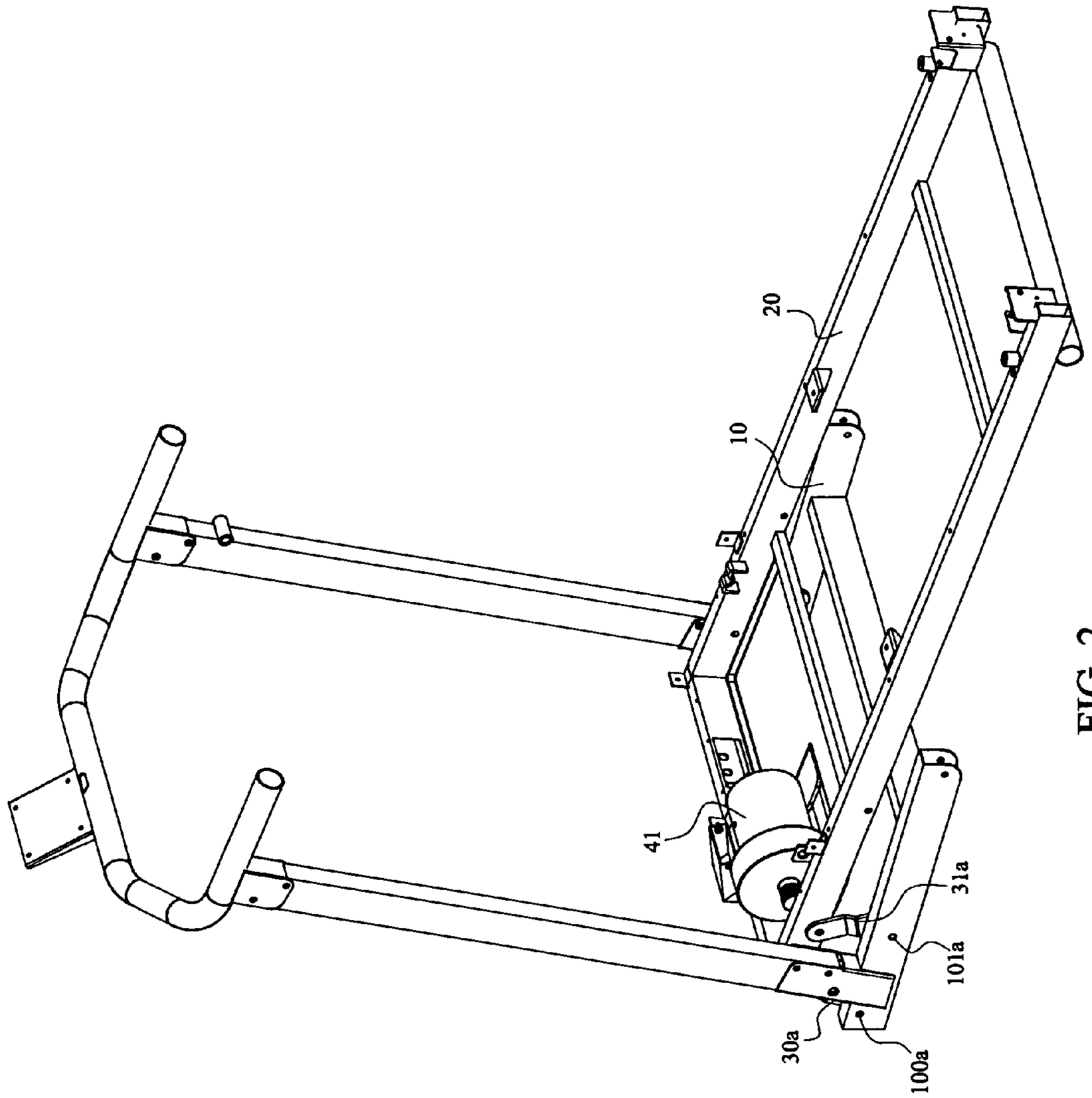



FIG. 2

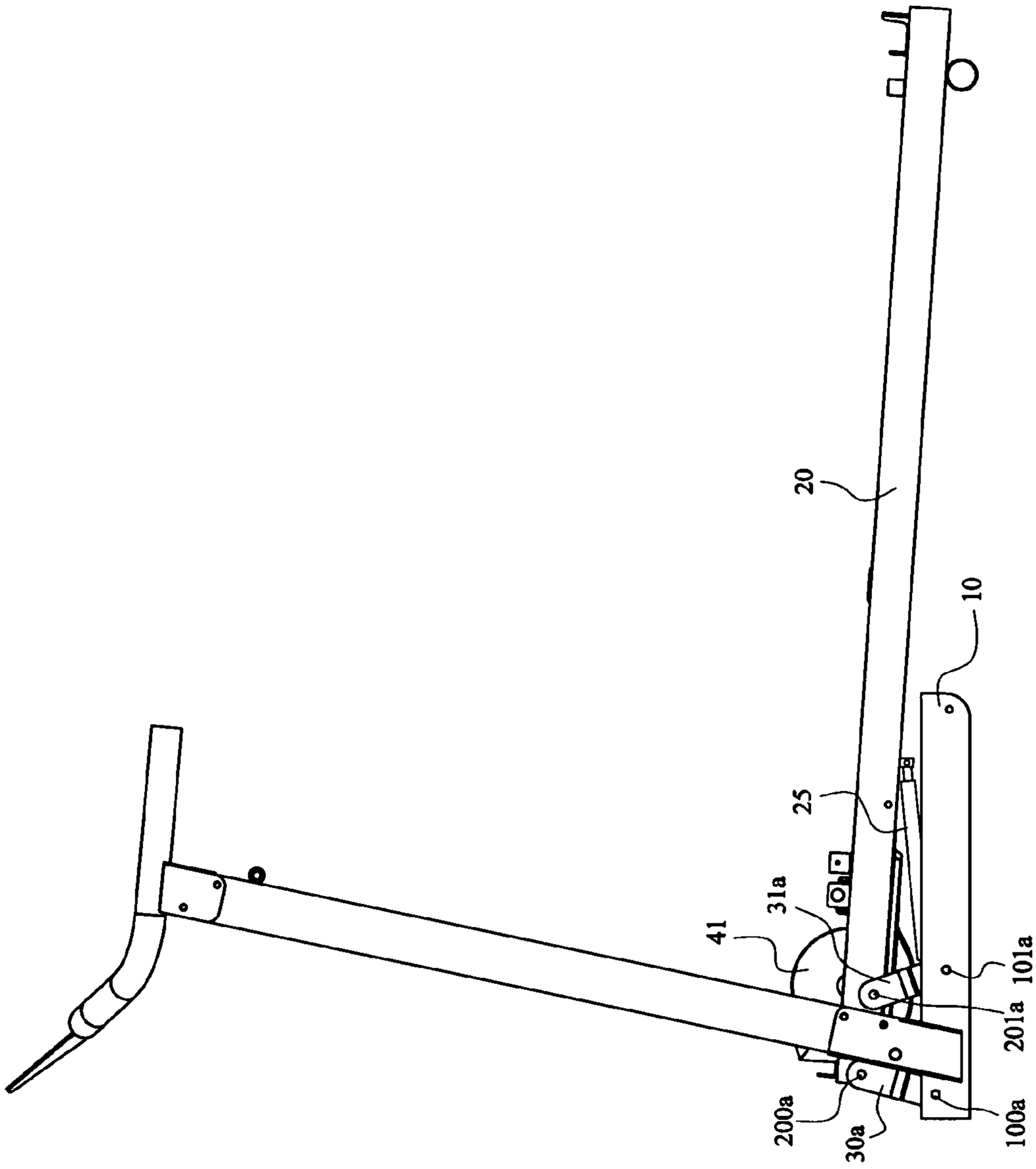



FIG. 3

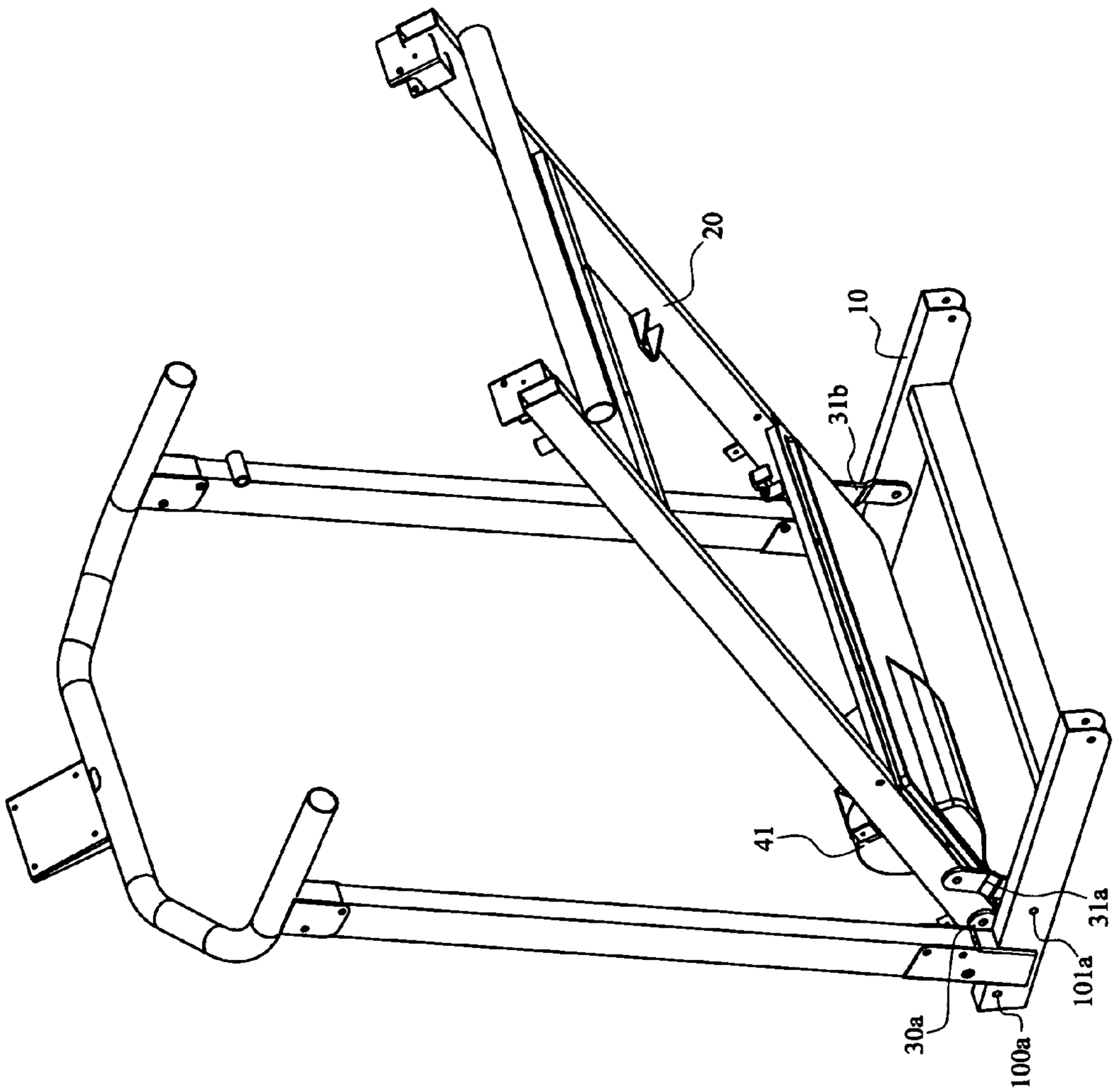



FIG. 4

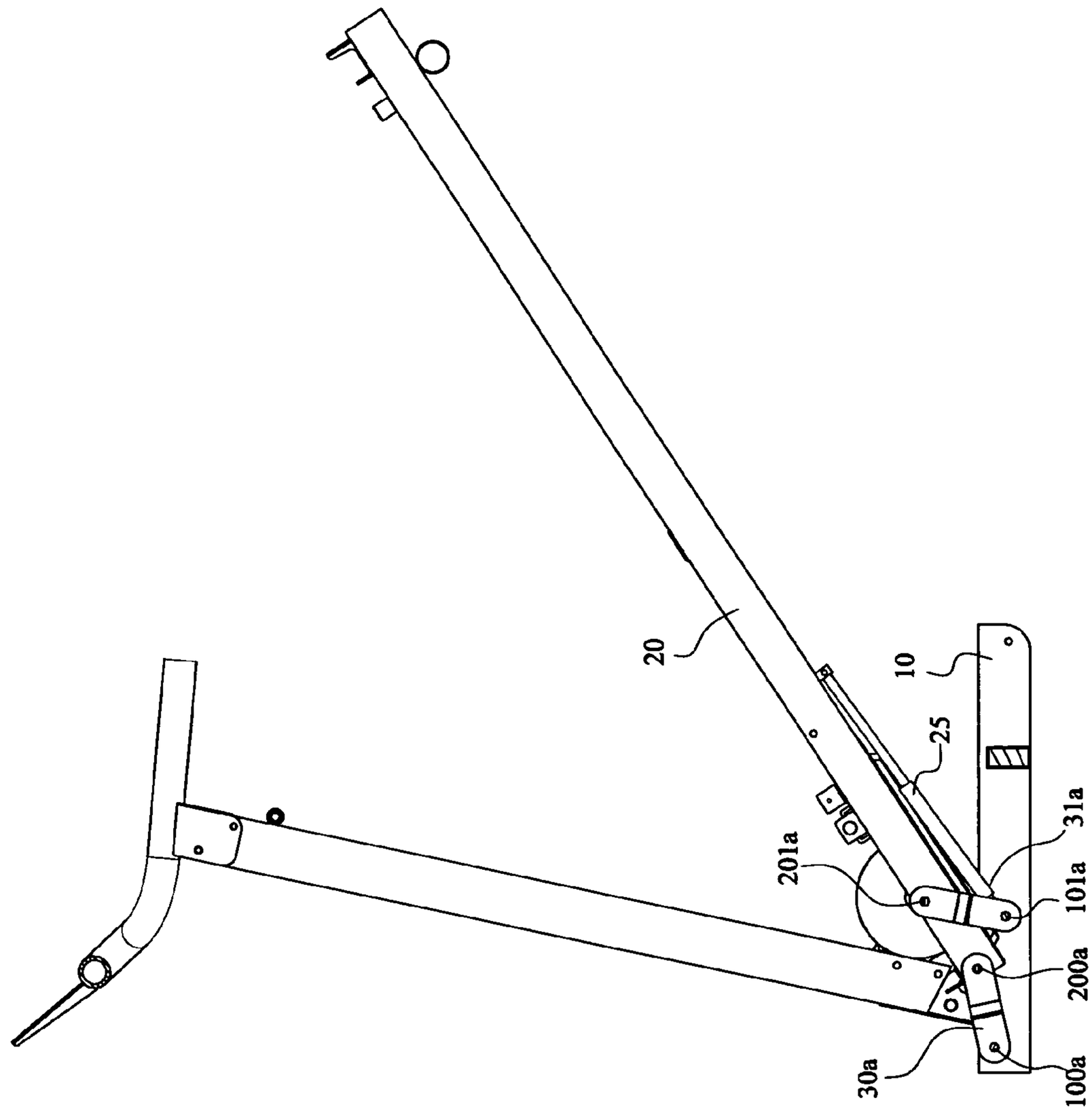



FIG. 5

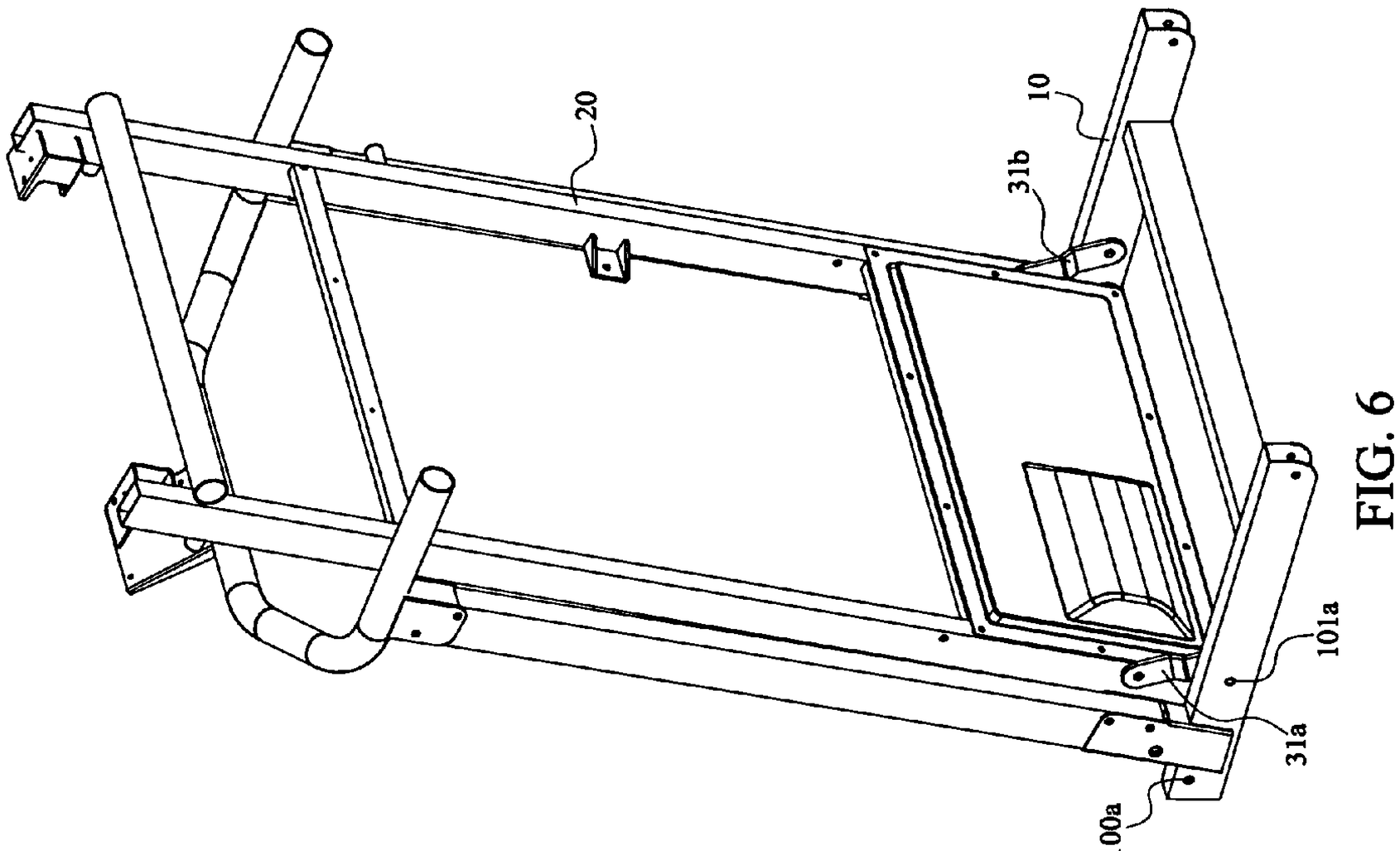



FIG. 6

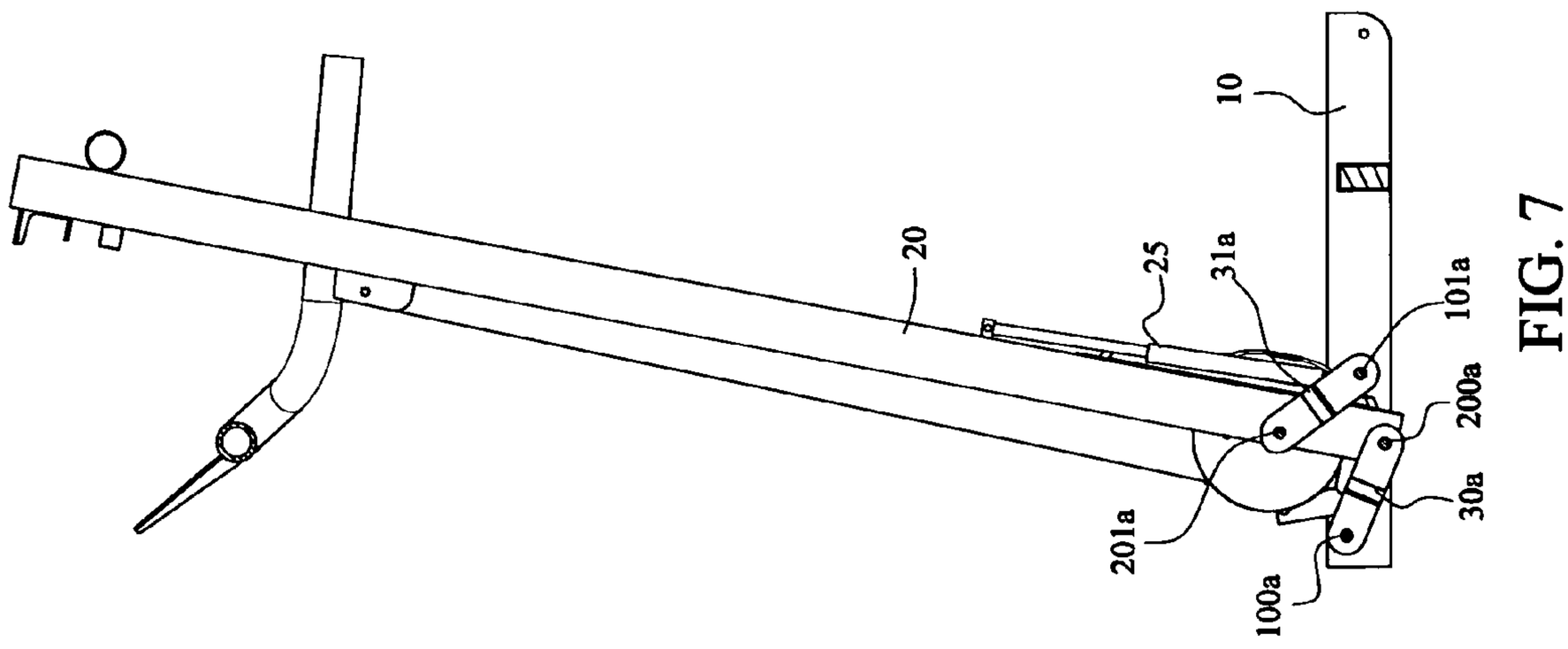
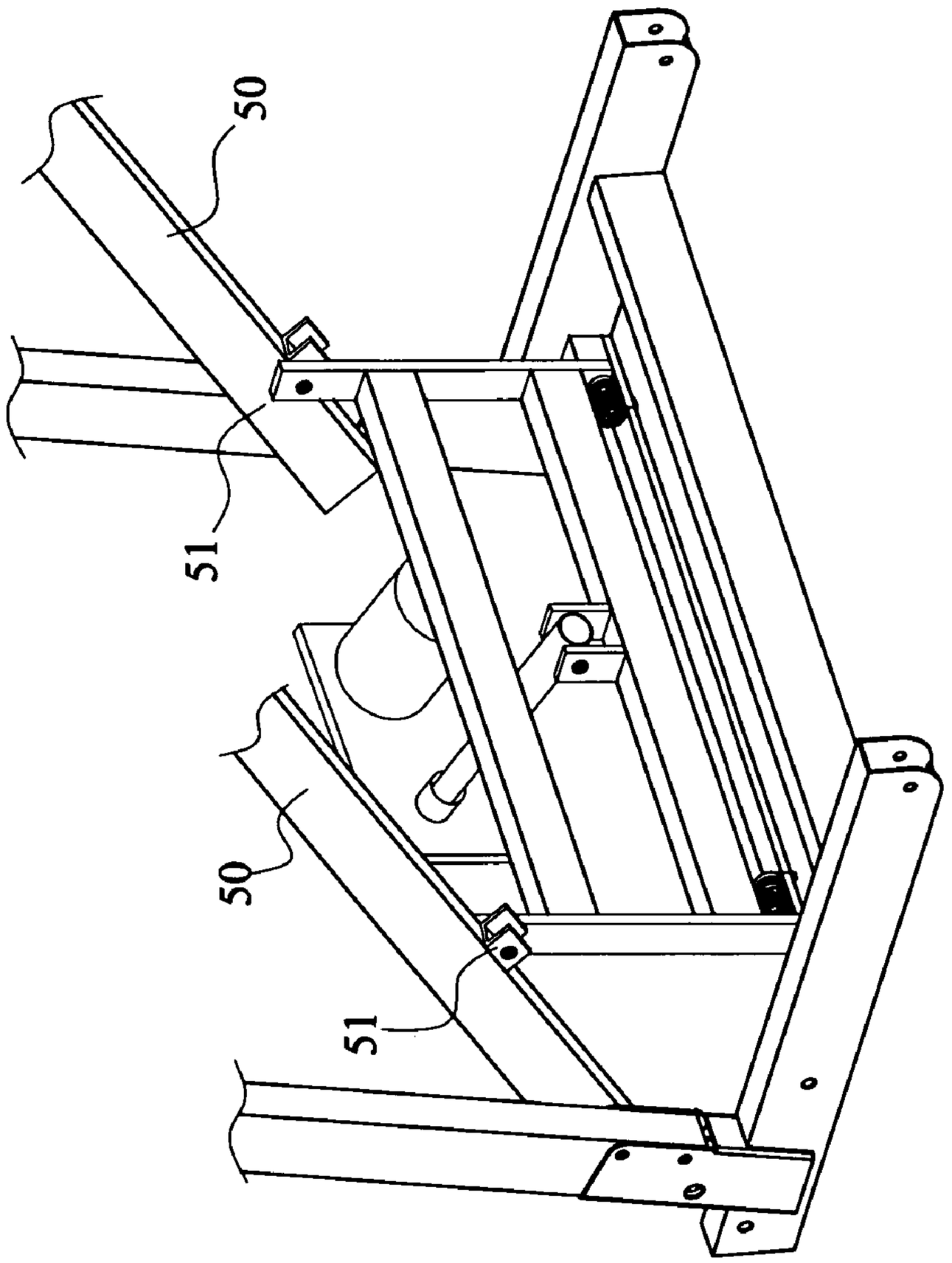



FIG. 7




PRIOR ART
FIG. 8

# FOLDING DEVICE FOR TREADMILLS

## FIELD OF THE INVENTION

The present invention relates to a folding device for folding the frame relative the base of a treadmill.

## BACKGROUND OF THE INVENTION

A conventional treadmill generally includes a base, a frame which has one end pivotably connected to the base and an endless belt is connected to the frame. The endless belt can also be driven by a motor so that the users set desired speed of the belt to exercise.

In order to save the space occupied by the treadmill, some treadmills are equipped with a folding device which allows the frame to be pivoted relative to the base. U.S. Pat. No. 6,527,679 discloses a folding mechanism which uses a motor and a threaded rod which is driven by the motor and a connection member pivotably connected to the frame is movably mounted to the threaded rod so that when the threaded rod is rotated by the motor, the connection member pivots the frame. It is noted that the frame is pivotably connected to the base at one point on each of the two sides of the base so that there requires a large angle to pivot the frame relative to the base. Further, another prior art shown in FIG. **8**, discloses a similar folding mechanism which is located at the middle portion **51** of the frame **50** so that a less effort is required to pivot the frame **50**. However, in order to accommodate the folding mechanism, the frame **50** has to be located at a higher position which makes the treadmill unstable.

The present invention intends to provide a folding device which provides two separated pivotal points on each of two sides of the base for connection with the frame so that the frame can be easily folded relative to the base.

## SUMMARY OF THE INVENTION

The present invention relates to a treadmill which comprises a base comprising two side rails and a frame has a first end thereof pivotably connected to the two sides of the base by two parallel first links and two parallel second links. A second end of the frame is a free end. An endless belt is mounted to the frame.

Two respective first ends of the two first links are pivotably connected to two respective first pivotal points the two side rails of the base. Two respective second ends of the two first links are pivotably connected to two respective second pivotal points on two sides of the first end of the frame. Two respective first ends of the two second links are pivotably connected to two respective third pivotal points on the two side rails of the base. Two respective second ends of the two second links are pivotably connected to two respective fourth pivotal points on the two sides of the first end of the frame.

The present invention will become more obvious from the following description when taken in connection with the accompanying drawings which show, for purposes of illustration only, a preferred embodiment in accordance with the present invention.

## BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is an exploded view to show the treadmill and the folding device of the present invention;



FIG. **2** is a perspective view of the treadmill with the folding device of the present invention;

FIG. **3** is a side view to show the treadmill with the folding device of the present invention;

FIG. **4** shows the frame is pivoted relative to the base of the treadmill by the folding device of the present invention;

FIG. **5** is a side view to show the frame is pivoted relative to the base;

FIG. **6** shows that the frame is pivoted to its final position;

FIG. **7** is a side view of the status of the treadmill in FIG. **6**, and

FIG. **8** shows the frame is pivoted relative to the base of the treadmill by the folding device of a prior art.

## DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to FIGS. **1** to **3**, the treadmill of the present invention comprises a base **10** comprising two side rails **11**, **12** and two posts **13**, **14** extend from the two side rails **11**, **12**. A U-shaped handle **15** is connected between the two posts **13**, **14**.

A frame **20** has a first end and a second end which is a free end.

An endless belt **21** is mounted to the frame **20**.

Two parallel first links **30***a*, **30***b* and two parallel second links **31***a*, **31***b*. Two respective first ends of the two first links **30***a*, **30***b* are pivotably connected to two respective first pivotal points **100***a*, **100***b* on the two side rails **11**, **12** of the base **10**. Two respective second ends of the two first links **30***a*, **30***b* are pivotably connected to two respective second pivotal points **200***a*, **200***b* on two sides of the first end of the frame **20**. Two respective first ends of the two second links **31***a*, **31***b* are pivotably connected to two respective third pivotal points **101***a*, **101***b* on the two side rails **11**, **12** of the base **10**. Two respective second ends of the two second links **31***a*, **31***b* are pivotably connected to two respective fourth pivotal points **201***a*, **201***b* on the two sides of the first end of the frame **20**. When in use, the frame **20** is put on the floor at an angle by the links **30***a*, **30***b*, **31***a*, **31***b*, and when not in use, the frame **20** can be pivoted relative to the base **10** By the first and second links **30***a*, **30***b*, **31***a* and **31***b*.

A first rod **30***c* is connected between the two first links **30***a*, **30***b* and a second rod **31***c* is connected between the two second links **31***a*, **31***b*. Therefore, the two first links **30***a*, **30***b* and the two second links **31***a*, **31***b* are co-rotated. The first rod **30***c* and the second rod **31***c* reinforce the four links **30***a*, **30***b*, **31***a*, **31***b* to support the frame **20**.

A pushing device **25** such as a pneumatic cylinder, is connected between the base **10** and the frame **20** so as to pivot the frame **20** relative to the base **10**. In detail, one end of the pushing device **25** is pivotably connected to the frame **20** and the other end of the pushing device **25** is pivotably connected to one of the first and second links **30***a*, **30***b*, **31***a*, **31***b*. By the pushing device **25**, the pivoting action of the frame **20** is easily.

A support deck **22** is connected on the frame **20** and two pairs of rollers **23**, **24** are connected on the two sides of the frame **20** and located corresponding to two ends of the support deck **22**. The endless belt **21** reeves through the two pairs of rollers **23**, **24** and the support deck **22** located beneath an upper portion of the endless belt **21** so as to support the load of the users.

A driving device **40** is located between the two side rails of the base **10** so as to drive one of the rollers **23**, **24** to drive the endless belt **21**.

The driving device **40** includes a motor **41** which has a first pulley **42** and a second pulley **43** is connected to the roller **23**, **24** which is driven by the motor **41**. A transmission belt **44** reeves through the first and second pulleys **42**, **43** such that the power of the driving device **40** is transferred to the roller **23**, **24** having the second pulley **43**.

Referring to FIGS. **4** to **7**, when folding the frame **20**, the user may lifts the second end of the frame **20** to pivot the frame **20** relative to the base **10** till the frame **20** reaches its final position as shown in FIGS. **6** and **7**.

While we have shown and described the embodiment in accordance with the present invention, it should be clear to those skilled in the art that further embodiments may be made without departing from the scope of the present invention.

What is claimed is:

**1**. A treadmill comprising:

a base comprising two side rails;

a frame having a first end and a second end which is a free end;

an endless belt mounted to the frame;

two parallel first links and two parallel second links, two respective first ends of the two first links pivotably connected to two respective first pivotal points on the two side rails of the base, two respective second ends of the two first links pivotably connected to two respective second pivotal points on two sides of the first end of the frame, and

two respective first ends of the two second links pivotably connected to two respective third pivotal points on the two side rails of the base, two respective second ends of the two second links pivotably connected to two respective fourth pivotal points on the two sides of the first end of the frame, the frame being capable of pivoting relative to the base by the first and second links.



**2**. The treadmill as claimed in claim **1**, wherein a first rod is connected between the two first links and a second rod is connected between the two second links.

**3**. The treadmill as claimed in claim **1**, wherein a pushing device is connected between the base and the frame so as to pivot the frame relative to the base.

**4**. The treadmill as claimed in claim **1**, wherein a pushing device is connected between the base and the frame so as to pivot the frame relative to the base, one end of the pushing device is pivotably connected to the frame and the other end of the pushing device is pivotably connected to one of the first and second links.

**5**. The treadmill as claimed in claim **1**, wherein a support deck is connected on the frame and two pairs of rollers are connected on the two sides of the frame and located corresponding to two ends of the support deck, the endless belt reeves through the two pairs of rollers and the support deck located beneath an upper portion of the endless belt.

**6**. The treadmill as claimed in claim **5** further comprising a driving device which drives one of the rollers so as to drive the endless belt.

**7**. The treadmill as claimed in claim **6**, wherein the driving device includes a motor which has a first pulley, a second pulley is connected to the roller that is driven by the motor, a transmission belt reeves through the first and second pulleys.

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